

NOTES, INFORMATION & NEWS

Mass Mortality of the Bubble Snail *Bulla gouldiana*
Pilsbry, 1893 (Gastropoda: Opisthobranchia)

by

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Bulla gouldiana Pilsbry, 1893, is the largest of the California bubble shells and ranges from Morro Bay, California, to Ecuador (MCLEAN, 1978; BEEMAN & WILLIAMS, 1980). This snail is often very abundant in bays and lagoons, and is one of the most common of all gastropods in the Newport Bay and Mission Bay regions of southern California (RICKETTS *et al.*, 1985).

Mass mortality of *Bulla gouldiana* occurred following a week of heavy rains during February 1986 in Morro Bay, California, the northernmost extreme of this snail's range. Seventy-one percent of the *B. gouldiana* population ($n = 283$) was observed either dead or dying on the Morro Bay mudflats during an intertidal survey (23 Feb. 1986; -0.3 m tide). The scattered remains of individuals without shells were discovered at the higher tidal levels, while numerous shelled specimens were observed dead or dying in the lower tidal regions. Few snails appeared healthy and active.

It is unknown what caused this mass die-off of *Bulla gouldiana*. The effects of an unidentified pathogen or fresh-water are possible factors. A bacterial infestation may have not only killed off much of the local *B. gouldiana* population, but also rendered the animals unpalatable to local predators and scavengers (Western Gulls and other shorebirds did not appear to be feeding on the abundant snail remains). Such disease outbreaks have been implicated in catastrophic die-offs of shallow-water marine organisms at other locations (see MENGE, 1979; DUNGAN *et al.*, 1982). The significant influx of freshwater resulting from severe storm activity the week preceding the observations may have caused the local mortality of *B. gouldiana*. Support for this hypothesis is that nine dead or dying echiuran worms, *Urechis caupo* Fisher & MacGinitie, 1928, were also observed on the tidal flats. I have seen similar mortality of *U. caupo* following heavy rains in Humboldt Bay, northern California.

It is premature to determine the exact cause of the mass mortality of *Bulla gouldiana*. Whatever the cause, several other common mudflat invertebrates did not appear to be affected. These included two other large opisthobranchs, the predatory *Navanax inermis* (Cooper, 1862) and the herbivorous *Aplysia californica* Cooper, 1863, as well as the ghost shrimps *Callinassa californiensis* Dana, 1854,

and *Upogebia pugettensis* (Dana, 1852). It would be useful to know whether similar mortalities of *B. gouldiana* have occurred at other California locations following heavy storm activity.

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"*Punctum pusillum*"

(Gastropoda: Pulmonata: Punctidae)—
a Correction

by

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In two recent papers (ROTH, 1985, 1986), I introduced the name *Punctum (Toltecia) pusillum* (Lowe, 1831) to the literature of west North American land mollusks as a senior synonym of *Punctum conspectum* (Bland, 1865). This taxon has been recognized as a very widely disseminated, "weedy" species that has received many names in various parts of the world (GITTEBERGER *et al.*, 1980; GUNTRIP, 1986; ROTH, 1986). Its correct name, however, is *Paraloama caputspinulae* (Reeve, 1852).

The earliest name proposed is apparently *Helix pusilla* Lowe (1831:46), based on specimens from Madeira. However, the combination *Helix pusilla* is at least twice preoccupied and cannot be used for the species. VALLOT (1801: 5) described a Recent European land gastropod as *H. pusilla*, as follows: "10. H. mignone. H. pusilla. Coquille